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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,124	09/26/2003	Hidetoshi Inoko	WING-003CIP	2646

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EXAMINER
KAPUSHOC, STEPHEN THOMAS

ART UNIT	PAPER NUMBER
1634	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/27/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/674,124	INOKO ET AL.	
	Examiner	Art Unit	
	Stephen Kapushoc	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 January 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *5-19* is/are pending in the application.

4a) Of the above claim(s) *5-12* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claims 1-4 are cancelled.
Claims 5-19 are pending.
Claims 5-12 are withdrawn.
Claims 13-19 are examined on the merits.

This Office Action is in reply to Applicants' correspondence of 01/25/2007. Claim(s) 1-4 is/are cancelled; claim(s) 5-12 is/are withdrawn; claim(s) 13 has/have been amended.

Applicants' remarks and amendments have been fully and carefully considered but are not found to be persuasive. Any new grounds of rejection presented in this Office Action are necessitated by Applicants' amendments. Any rejections or objections not reiterated herein have been withdrawn in light of the amendments to the claims or as discussed in this Office Action.

This Action is made **FINAL**.

Response to Remarks: Restriction Requirement

1. Applicants have indicated that the invention is drawn to a method requiring the analysis of all of the sequences presented as SEQ ID NO: 1-27,088. Applicants further argue that the election of SEQ ID NO: 1 and 2 as a specific combination of the sequences, in response to further restriction required of the group of method claims, in the Requirement for Restriction of 10/17/2005, was made with traverse. The Examiner maintains that the restriction requirement for the election of a specific combination of SEQ ID NO: was made Final in the Office Action of 02/02/2006. Thus the invention examined for the First Action on the Merits of 02/02/2006 was a gene mapping method where the claims generically encompassed the amplification of any microsatellite polymorphic markers (original claims 1,2, and 4), and methods encompassing the amplification specifically of SEQ ID NO: 1 and 2 (claim 3, as elected).

While applicants argument that the primers of original claim 3 can be used in the method of original claims 1, 2, and 4 is accurate, the examiner maintains that a method drawn to the amplification of any particular set of specific microsatellite markers identified by SEQ ID NOs is patentably distinct from any other method requiring the amplification of any particular different set of different microsatellites identified by different SEQ ID NOs. Furthermore, while Applicant argues that in the claimed method 'the sequences represented by SEQ ID NO: 1-27,088 are not used separately but as a single set of 27;088 sequences', it is noted that in response to a requirement for the election of a specific combination of SEQ ID NOs: 1-27,088 (thus requiring any election of any combination of Applicants choosing), Applicant did not elect the combination of sequences comprising every one of SEQ ID NO: 1-27,088, but instead elected only SEQ ID NO: 1 and 2.

Priority

2. Acknowledgment is made of applicant's submission of a certified copy of the 2000-112699 application as required by 35 U.S.C. 119(b).

3. Acknowledgment is made of applicant's submission of translated copies of applications filed in Japan on 09/28/2002 and 12/09/2002 (2002-327516 and 2002-383869).

4. The instant application is a continuation-in-part of US application serial no. 10/257,511, filed march 7, 2003, which application is a §371 national phase application

of PCT/JP00/07621, filed 10/30/2000. Claims 13-19 are not supported with respect to the SEQ ID NO:'s recited in claims 13-19. Therefore, claims 13-19 are awarded the effective filing date of 09/26/03, the filing date of the instant application.

Response to Remarks

Applicant argues (p.5-6 of the Remarks of 06/30/2006) that the subject matter and sequences referred to as SEQ ID NO: 1-27,088 are fully supported in Japanese application # 2002-327516. The examiner has reviewed the English translation of the document provided by applicant, and while the document does reference SEQ ID NO: 1-27,088 (e.g.: p.15 ¶[0039]), there does not seem to be any indication of the actual sequences of those referenced sequence identifiers. Furthermore it is noted that the instant application is a CIP of pending application 10/257,511, where 10/257,511 is a 371 national stage of PCT/JP00/07621, however the sequence listing of application 10/257,511 contains only 22 sequences. Thus it is not clear that the cited priority documents contain a basis for the SEQ ID NO: 1-27,088 of the instant application.

Therefore, claims 13-19 are awarded the effective filing date of 09/26/03, the filing date of the instant application.

New Claim Objections

5. Claim 13 is objected to because of the following informalities:

Claim 13 has been amended such that the claims reads (ln.6) 'DNA sequences of said combination reverse primers' where 'DNA sequences of said combination and reverse primers' is likely intended.

6. Appropriate correction is required.

New Grounds of Rejection

Claim Rejections - 35 USC § 112 2nd¶ - Indefiniteness

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 17-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 17 is unclear over recitation of the phrase 'the microsatellite genetic polymorphism markers found positive through the method of claim 13' because there is no antecedent basis for any such 'markers found positive' in either claim 17, or claim 13 (from which claim 17 depends). It is suggested that the claim be amended to provide proper antecedent basis for this claim element.

Claim 18 is unclear over recitation of the phrase 'the microsatellite genetic polymorphism markers found positive through the method of claim 13' because there is no antecedent basis for any such 'markers found positive' in either claim 18, or claim 13 (from which claim 17 depends). It is suggested that the claim be amended to provide proper antecedent basis for this claim element.

Claim 19 is unclear over recitation of the phrase 'based on single nucleotide polymorphisms' because it is unclear if the claimed method is 'based on single nucleotide polymorphisms' or if the analyzed candidate segment is 'based on single nucleotide polymorphisms'. Additionally, it is not clear what is required for any method or DNA segment to be 'based on single nucleotide polymorphisms'. Does the claim require, for example, detecting some specific variant nucleotide positions within a particular DNA segment that had been previously identified by some other particular method?

Claim Rejections - 35 USC § 101

9. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

10. Claims 13-19 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific or substantial asserted utility or a well established utility.

The method of gene mapping entailing amplification of a combination of microsatellite markers comprising SEQ ID NO:'s 1 and 2 from interest and control subjects and comparing the DNA fragments produced where comparing identifies DNA fragments with one or more genomic regions associated with the characteristic of interest is not supported by a specific asserted utility because the specification does not teach an association between the microsatellite markers of SEQ ID NO:'s 1 and 2 and

any specific phenotype or specific gene associated with a phenotype and therefore the use of these markers in the disclosed method of gene mapping is not expected to have any specific effect. The specification teaches that the invention involves a gene mapping method which entails analysis of a DNA sample from test and control subjects for the presence of an allelic form of a plurality of microsatellite markers in order to identify regions of the genome associated with a characteristic of the test subject relative to the control subjects such as a region containing a pathogenic gene (page 3, para 0010). The specification teaches that SEQ ID NO:'s 1 and 2 are genetic polymorphism markers and are located on chromosome 1 (page 6, para 0045 and 0046). The specification teaches that 6 markers located on chromosome 1 were found to be associated with rheumatoid arthritis (page 60, para 00248). However, the specification does not teach an association between the microsatellite markers of SEQ ID NO:'s 1 and 2 and any specific phenotype or specific gene associated with a phenotype and therefore the use of these markers in the disclosed method of gene mapping is not expected to have any predictable or specific effect.

The method of gene mapping entailing amplification of a combination of microsatellite markers comprising SEQ ID NO:'s 1 and 2 from interest and control subjects and comparing the DNA fragments produced where comparing indentifies DNA fragments with one or more genomic regions associated with the characteristic of interest is not supported by a substantial utility because no substantial utility has been established for the claimed subject matter. The specification teaches that SEQ ID NO:'s 1 and 2 and the other microsatellite polymorphisms disclosed can be used in the

claimed method to identify regions containing pathogenic genes or genes relating to human phenotypes with genetic factors (see page 3, para 0010). The specification teaches that susceptibility genes within these regions can be identified by further SNP analysis (page 60, para 00249). The specification teaches that genes isolated by the claimed method, proteins encoded by these genes, antibodies against the proteins, and/or polynucleotides containing at least 15 nucleotides complementary to one of the strands of these genes or their complementary strands may be used for genetic screening and gene therapy (page 60, para 00250). Furthermore, the specification teaches that a pathogenic gene of a disease isolated by the claimed method, proteins encoded by these genes, antibodies against the proteins, and/or polynucleotides containing at least 15 nucleotides complementary to one of the strands of these genes or their complementary strands may be used for testing, preventing, and/or treating the disease (see page 60, para 00250). However, a starting material that can only be used to produce a final product does not have a substantial utility where the product is not supported by a specific and substantial utility. In the instant case, the genes identified that could possibly be identified by the use of SEQ ID NO: 1 and 2 in the claimed method are not taught by the specification nor are they known in the art and therefore the use of SEQ ID NO:'s 1 and 2 to identify such genes does not constitute a substantial or "real world" utility. Therefore, because the specification and the art does not teach an association between the microsatellite markers of SEQ ID NO:'s 1 and 2 and any specific phenotype or specific gene associated with a particular phenotype, no

substantial utility is provided for the use of SEQ ID NO: 1 and 2 in the claimed method of gene mapping.

Response to Remarks

Applicants have argued that the pending claims are directed to a method of association analysis in which the sequences represented by SEQ ID NO: 1-27,088 are not used separately but as a single set of 27,088 sequences, with each containing at least one microsatellite marker (Remarks of 06/30/2006, p.6). Applicants additionally argue that the method of the invention is not limited to linking a know disease associated with microsatellite markers, but encompasses identifying new pathogenic genes associated with a disease. These arguments have been fully and carefully considered but are not found to be persuasive. As discussed earlier in this Office Action, Applicants have elected a method comprising the combination of specific markers of SEQ ID NO: 1 and 2 (Response to Restriction of 11/16/2005). Thus the utility asserted for a method comprising the use of a set of markers comprising each of SEQ ID NO: 1 to 27,088 is not commensurate in scope with the originally elected invention.

The rejection is MAINTAINED.

Claim Rejections - 35 USC § 112

11. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

12. Claim 3 is also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific or substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

The claim is drawn to a method of gene mapping entailing amplification of a combination of microsatellite markers comprising SEQ ID NO:'s 1 and 2 from interest and control subjects and comparing the DNA fragments produced where comparing indentifies DNA fragments with one or more genomic regions associated with the characteristic of interest. The specification teaches that SEQ ID NO:'s 1 and 2 and the other microsatellite polymorphisms disclosed can be used in the claimed method to identify regions containing pathogenic genes or genes relating to human phenotypes with genetic factors (see page 3, para 0010). The specification teaches that susceptibility genes can be identified by further SNP analysis (page 60, para 00249). The specification teaches that genes isolated by the claimed method, proteins encoded by these genes, antibodies against the proteins, and/or polynucleotides containing at least 15 nucleotides complementary to one of the strands of these genes or their complementary strands may be used for genetic screening and gene therapy (page 60, para 00250). Furthermore, the specification teaches that a pathogenic gene of a disease isolated by the claimed method, proteins encoded by these genes, antibodies

against the proteins, and/or polynucleotides containing at least 15 nucleotides complementary to one of the strands of these genes or their complementary strands may be used for testing, preventing, and/or treating the disease (see page 60, para 00250). However, the specification nor the art teaches any association, nor a predictable association, between the microsatellite markers of SEQ ID NO:'s 1 and 2 and any specific phenotype or specific gene associated with a particular phenotype. In addition, the art and the specification teaches that although many microsatellite polymorphisms exist in the human genome, not all are linked to a particular gene or region of the genome that is associated with a particular phenotype. The skilled artisan would have to test for a predictable association between SEQ ID NO:'s 1 and 2 and a region of the genome or specific gene associated with a phenotype by the claimed method which would involve testing many different regions of the genome or genes associated with many different phenotypes and may not lead to success and, therefore, this would be considered undue experimentation as it would involve unpredictable trial and error analysis. Because the specification nor the art has taught a predictable association between the microsatellite markers of SEQ ID NO:'s 1 and 2 and any specific phenotype or specific gene associated with a particular phenotype, undue and unpredictable experimentation would be required of the skilled artisan to determine how to use the claimed invention

Response to Remarks

Applicants remarks concerning the rejection of claims under 35 USC 112 1st¶ for lack of enablement are addressed earlier in this Office Action in the Response to Remarks regarding the rejection of claims under 35 USC 101 for lack of utility. Applicants arguments (Remarks of 06/30/2006, pages 6-7) are addressed to a method requiring the use of a set of sequences including all of SEQ ID NO: 1 to 27,088, and such arguments are not commensurate in scope with the elected invention.

This rejection is MAINTAINED.

Conclusion

13. No claims are allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Kapushoc whose telephone number is 571-272-3312. The examiner can normally be reached on Monday through Friday, from 8am until 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla can be reached at 571-272-0735. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Stephen Kapushoc
Art Unit 1634

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PRIMARY EXAMINER